

Traffic Problems of a District Engineer

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When I opened the letter inviting me to attend this session and tell you about the "Traffic Problems of a District Engineer," my first impulse was to convey my regrets to Mr. Bunch and assure him that he must have made a mistake, that as far as I knew, the District Engineer did not have any traffic problems. After all the District Engineer has available an Assistant District Engineer for Traffic, a very capable individual versed in all the details of traffic generation, movement study, street capacity, parking demand, origin and destination of traffic, basic traffic data, traffic operational techniques, to say nothing of such simple matters as traffic counts, flashers, no passing lines, background reflectorization, obedience lines, traffic signals, school boy patrols and a host of other subjects which could be recited indefinitely. Certainly I know of no easier way to handle the many communications on traffic problems than the addition of a simple notation reading approximately as follows: "George, please investigate and prepare an answer for my signature." Confidentially, even for this purpose I use a mimeograph form which reduces my efforts to the scratching of a couple of check marks and a toss in the out basket. Don't misunderstand me. I read the correspondence and do my best to grasp the problem. Certainly a District Engineer must try to acquaint himself with happenings in his district. But these things cannot contribute much to the solution of any particular traffic problem.

Unhappily for this session, I was not immediately able to dispatch a reply to Mr. Bunch. By the time I could get around to dictating a reply, my desire to get up and make a speech had betrayed you and I found myself making an acceptance.

Since it had not previously occurred to me that the District Engineer might have any traffic problems, I thought that my next

step ought to be an attempt to define the term "traffic problem." The dictionary defines "traffic" as "the flow of pedestrians and vehicles along a street or highway." It defines the word problem as "anything that is required to be done." Therefore, it might be possible to define the term "traffic problem" as "anything that is required to be done about the flow of pedestrians and vehicles along a street or highway."

The term District Engineer is much harder to define. It is a title which appears to have derived by usage from early days of the state highway organization when construction activities were predominant. It sometimes seems to me that he is more accountant, personnel manager or errand boy, than engineer.

Incidentally, the dictionary defines the engineer as "one who maneuvers or contrives." A District Engineer certainly does a tremendous amount of maneuvering and contriving these days. It is remarkable how well the definition fits.

I might talk about a multitude of items with which you, as traffic engineers, are far more familiar than I will ever be. Most of the problems resulting from heavy urban traffic are being continuously studied and frequently reported upon in various technical papers and magazines. These problems require detailed study over considerable periods of time and the District Engineer must necessarily delegate such work to his assistant. Rather, I shall take this opportunity to point out—and occasionally discuss—various problems which, from time to time, arise to plague the entire district staff—problems not entirely resulting from the flow of traffic but having more or less influence on the safety and convenience of traffic.

First, let me remind you that the present state highway systems, in Indiana and all the other states, were set up in response to a demand for more direct routes and for reliable all-weather pavements for the use of a rapidly increasing number of motor vehicles. The establishment of the state highway system in Indiana can rightly be called an attempt to solve a "traffic problem" and all the operations of the State Highway Commission might be considered as continuing phases of the same attempt.

In my opinion the most serious traffic problems which confront the District Engineer these days are those occasioned by disaster. I am not referring to atomic bombing or other methods of warfare. I am referring to the very serious interruption to the everyday routine of living and working which result from a breakdown in some important part of the state highway system. If any District Engineer entertains the slightest doubt about the importance of the least bit of

state road in his district, he has but to close that road and his telephone will immediately disillusion him.

BRIDGE DISASTERS

I feel that I am speaking for every District Engineer in Indiana and in every other state, when I say that the worst bugaboo we face is the loss of a bridge. Whether the loss results from a flood or other natural disaster or from the actions of the reckless, irresponsible and often drunken driver of a highway vehicle, the ensuing uproar and confusion is indeed a nightmare, and the amount of traffic affected by such a disaster serves as a direct gauge of the intensity of the nightmare.

Most people can understand the disabling or collapse of a bridge due to flood waters and are resigned to a certain amount of inconvenience for a limited period of time. But they actively resent the wanton destruction of a bridge by a reckless or drunken driver and through some peculiar mental processes, a good part of this resentment is transferred to the highway department when we are not able to reopen the bridge at once.

When a bridge is disabled or destroyed, the District Engineer is faced with two major traffic problems. He must immediately provide another route or routes to which he can safely transfer both the volume of traffic and the weight of individual loads accustomed to crossing the bridge. At the same time, he must make the basic decision as to what procedure is to be followed in repairing or reconstructing the bridge. The length and condition of available detours will have great influence on the manner and speed of repairs or replacement, and the latter may easily determine the selection of a detour route.

I believe most of us can remember the time when the only consideration in selecting a detour was the determination of the shortest available route over local county roads. Even when such roads were not surfaced they could quickly and easily be improved, by grading and the addition of a small amount of aggregate, to the point where they would sustain the state highway traffic for an indefinite period of time. Many people still think detours can be selected on the same basis. Only those maintenance employees who have had the bitter experience of attempting to maintain the flow of modern traffic over thinly surfaced local roads and narrow, weak bridges can adequately express the difficulties of this course. If the weather is wet, they are

besieged with complaints about mud. If the weather is dry, they are still besieged with complaints—this time about the dust.

The realities of present day traffic usually demand that state highway detours be routed over other state highways of comparable capacity and load carrying ability. In the Seymour District, this is especially difficult where the breakdown occurs on a major highway. A detour capable of carrying the traffic will often be two or three times the length of the road it replaces. Preparation and erection of the necessary directional and informational signs is a major problem in itself—and an expensive one. Protection of traffic at the scene is also a major problem. Standard warnings, barricades and lights are not sufficient. We usually find it necessary to provide flagmen 24 hours a day for several days and to place in the approach some obstruction which cannot be readily moved. We have found that an old grader gives good protection provided it is chained to the hand-rail or guard rail on each side of the pavement and the chains locked in place. A third major problem is the protection of adjacent and inadequate highways and bridges from their use as unofficial detours. Except for the posting of bridges, such protection must necessarily be a problem for state or local police officers, but the District Engineer will generally need to request their cooperation.

A little over a year ago we had to close a bridge at the west edge of Columbus. Two major highways, Alternate U.S. 31 and IND. 46, are routed across this bridge and two other highways, IND. 7 and IND. 58 terminate not far from the bridge. The bridge had an average daily traffic count of approximately 7,000 vehicles. The nearest adequate stream crossings are near Seymour, 18 miles to the south and near Amity, 14 miles to the north. Here it was necessary to establish two long range detours, one for Alternate U.S. 31 from Seymour over U.S. 50, U.S. 31 and IND. 7 to Columbus, and one for IND. 46 from Columbus over Alternate U.S. 31, U.S. 31, IND. 252 and IND. 135 to Nashville. In addition to the usual detour routing, we found it necessary to prepare and erect approximately 50 special informational signs. This work required the time of the sign crews in both the Columbus and Seymour subdistricts for over a week.

A good portion of the traffic using this bridge is comprised of commuters who work in Columbus and live west and south of Columbus. The above detours were of little help to these people and they resorted to the use of county roads and a covered timber bridge approximately three miles northwest of Columbus. In order to make

this bridge safe for the greater volume of light vehicles, the county had to make immediate repairs and they were forced to station flagmen at the bridge 24 hours a day to direct alternating one-lane traffic and to prohibit excessive loads—anything heavier than a pickup truck.

Variations on the above problems arise each time it is necessary to close a highway, whether because of a disaster or because of construction or reconstruction of a road or bridge. Reconstruction or resurfacing projects should be planned to proceed with as little interruption to normal traffic as possible. Closing of a heavily traveled road may permit economies in construction, but in my opinion such savings will be more than offset by additional cost of repairs and maintenance to the detour.

Closing of a major state highway will undoubtedly work a hardship on those business establishments which depend on the traffic of that highway for their livelihood. Their petitions, letters, telegrams and phone calls to the Governor, the Highway Commission and members of the legislature cannot help but cause those officials to consider whether or not it was wise to close the road. The burden of a detour rests squarely on the District Engineer and he must be able to defend his action and to prove its necessity both to the general public and to his superiors in his own organization.

PERMITS

I should now like to forget about unpleasant detours and move on to the equally unpleasant multitude of problems grouped together under the word permit. Probably you are all familiar with the following quotations from our Highway Laws but I want to repeat them at this time. "No opening shall be made in any highway in the state highway system, or in the right of way of any such highway, or in the roadway of any street of any city or town over which such highway is routed, the maintenance of which street the state highway commission is charged with by law, nor shall any structure or obstruction be placed in any such highway or roadway of any such street without the consent of the state highway commission. No such highway or roadway of such street shall be dug up for laying or placing any pipe, sewer, pole, wire, conduit, track, railway or for any other purpose, and no trees shall be removed from the right-of-way of any such highway, without the written permit of the state highway commission, and then only in accordance with the regulations of

said commission, and the work shall be done under the supervision and to the satisfaction of said commission.

"The State highway commission or local authorities having jurisdiction over any public highway and being responsible for the repair and maintenance thereof is authorized upon proper application in writing upon good cause shown to grant permits for transporting heavy vehicles and loads, or other objects, not conforming to the provisions of sections two and eight of this act, whenever in the discretion of any such officer or body the highway or bridge thereon will not be seriously damaged thereby."

It would be impossible to repeat here the additional laws and regulations applying to permits, but I would like to briefly touch on those permits which involve traffic considerations.

Form M-173 "Application for Permit to Cut into State Road" is usually handled entirely by the subdistrict superintendent, but occasionally the District Engineer becomes involved when the proposed cut would interfere with traffic. I find that applicants for this type of permit tend to disregard everything but their own convenience and costs and will frequently appeal directly to the highway commission if their application is rejected because of traffic considerations.

Form M-173-E "Application for a Permit to Construct a Driveway Entrance and Approach" is the permit which most directly concerns traffic. These applications are first approved by the superintendent, but are given a more thorough check in the district office, particularly those applications for drive-in theaters and other commercial establishments are checked by the Assistant District Engineer of Traffic. Here again the District Engineer is not too much involved in the application. His troubles crop out later in those instances where the applicant has failed to follow the terms of the permit.

Form M-173-F "Application for a Permit to Display Temporary Banners or Decorations Along or Over a State Highway" is not used too much and usually involves only a consideration of head room. However, it is sometimes necessary to insist that the display be temporary and to require assurance that it will be promptly removed.

Form M-173-G "Application for a Permit to Close a State Highway for the purpose of Carnivals, Street Fairs, etc." are filed annually by a surprising number of communities. They now include several soap box derby races and, when they interfere with heavily traveled roads, are a source of complaints to the district.

M-173-U "Application for a Permit to Erect Shelter Houses" is substantially a driveway permit and is handled accordingly.

M-180 "Application for a Permit to Construct a New Railroad Crossing or Change Rail Elevation of a Railroad Crossing a State Road" is always a headache for the District Engineer and the District Office because it is almost always necessary to close the road and detour traffic. It is also difficult to get the applicant to submit complete plans and even more difficult to get the owner to keep the crossing in proper repair.

M-193 "Application for Permit to Move a Building over a State Road" is almost entirely a traffic problem since it is always necessary to close all or part of the roadway. It frequently involves a detour. It may involve the District Engineer in trouble with property owners along the route of the move unless it is clearly understood that the permit to move the house does not automatically grant permission to cut back any and all trees along the route.

M-233 "Application for Permit to Transport Oversize or Overweight Vehicles and Objects over State Highways" may present a variety of problems. Applications for overloads must be judged by the route proposed for travel, taking into consideration the conditions of the surface, the capacity of the bridges and at certain seasons of the year, the condition of the subgrade. Frequently an alternate route can be suggested. Overwidth loads involve the use of flagmen and other measures to protect normal traffic. Overheight permits may require rerouting to avoid bridges and underpasses. The District Engineer is expected to be ready to make recommendations on these matters at all times.

SNOW AND ICE

Wintertime snow and ice conditions present a variety of traffic problems which are primarily the responsibility of the Assistant District Engineer of Maintenance and the Sub-district Superintendents. But when conditions are severe, the District Engineer may be called on for help. Of course the removal of snow and ice is entirely a traffic problem. No traffic—no need to clear the pavement. When it snows, present day traffic demands two things of the state highway department. The continuous and uninterrupted use of the highways and detailed information on the condition of the highways. Anyone who has ever had close contact with snow and ice removal operations will tell you that his work would be much simpler and easier if all traffic could be kept off of the highways until the storm had ceased

and maintenance workers had had a few hours time to clear or treat the pavement. In the hilly country prevailing in the Seymour District, maintenance crews are continually hampered by trucks which attempt to travel as usual, stall on the first slick hill, jackknife and block the highway so that even the snow plows cannot get by until the truck can be pulled out of the way.

Accurate information on road conditions is equally difficult to secure and furnish to callers. Roads may be open, completely blocked and open to traffic again in a matter of a few minutes. Basic information must come from workers who are making strenuous efforts to keep traffic moving and who do not have access to a phone for long periods of time. This problem will probably not be solved until each unit possesses two-way radio communication with headquarters.

Many other maintenance operations are heavily affected by traffic. Perhaps you are not aware that one of the main reasons maintenance employees work only five days a week is that it is too hazardous for them to try to work under Saturday traffic conditions. The same restriction applies to holidays.

From time to time the districts are asked to submit programs for new construction and for rehabilitation of existing roadways. Recommendations are based on field inspections and on maintenance performance records, but priority is assigned almost without exception on the basis of volume of traffic.

No one aware of the facts of life can ignore the demands that heavy traffic make on the time and efforts of highway employees. No one can watch the mushroom villages spring up along our highways and not realize the tremendous effect this same traffic can have on a local community.

I repeat my theme. Every highway problem, every problem of the District Engineer, is a traffic problem. I hope I have not given you too gloomy a picture of the trials of a District Engineer. After all there are occasional warm, sunshiny days when he can throw down his pen, drive out to a remote corner of his district and tramp in the mud of a new grade or sniff the fragrant odor of fresh asphalt. Who can ask for more.